UNITED STATES PATENT AND TRADEMARK OFFICE

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10/761,686	01/20/2004	Lisa Robin Goldberg	BARR0011	3349

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 April 2008*.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

     4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

     a)☐ All   b)☐ Some * c)☐ None of:

       1.☐ Certified copies of the priority documents have been received.

       2.☐ Certified copies of the priority documents have been received in Application No. _____.

       3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

     * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☐ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
     Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
     Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

This action is in response to Applicant's filing of 4/16/2008. Claims 1-33 are pending

and examined below.

Claim Rejections - 35 USC § 102

1.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2.   Claims 1-5, 8-12, 15-19, and 22-33 are rejected under 35 U.S.C. 102(b) as being

anticipated by US Patent 6,078,903 to Kealhofer (Kealhofer).

<u>With respect to claim 1</u>

Kealhofer teaches:

A computer implemented method for generating a term- structure of default

probabilities, comprising the steps of:

at least one computer determining a conditional default process by

performing the steps comprising;

determining a firm's default barrier distribution (i.e. expected default

frequency at the horizon, see col 4, lines 24-42 and fig 2 and 3, note that

normal distribution pictured in fig 3);

determining a firm's conditional default probability over time using

said default barrier distribution (i.e. $G_M(DP_M|A_H)$, probability of default from

horizon to maturity, see col 7, lines 13-24);

determining a pricing trend function using said conditional default

probability where said pricing trend function estimates a probability of

default of a firm (i.e. financial analysis using default information, see col 7,

lines 46-67, note that expected value is calculated); and

said at least one computer generating said term structure of default

probabilities for a firm based on said pricing trend function (see col 4, lines

17-23).

<u>With respect to claim 2</u>

Kealhofer teaches:

The computer implemented method of Claim 1 (see rejection of claim 1 above),

further comprising the step of: calibrating parameters to represent the quality of

incomplete information (i.e. adjust a horizon default point threshold, see col 6,

lines 24-40, note that such an adjustment is necessary to fine tune the model to

compensate for a lack of information concerning the true underlying process of a

firm default).

<u>With respect to claim 3</u>

Kealhofer teaches:

The computer implemented method of Claim 1 (see rejection of claim 1 above),

further comprising the step of: estimating diffusive (i.e. variance, see col 7, lines

62-65, note that variance is a measure of the firm's volatility which accounts for

the day to day fluctuations in firm value) and jump components of credit risk

premium (i.e. $V_{H|D}$, value of he loan, given default, see col 4,lines 24-42, note that

the decrease in the value of the loan in default would decrease the value of the
firm).

With respect to claim 4

Kealhofer teaches:

The computer implemented method of Claim 1 (see rejection of claim 1 above),
further comprising the step of: estimating market implied recovery rates
(covariance/correlation used to computer the unexpected loss on an individual
loan, see col 8, line 1-col 9, line 5, note that the likely amount of recovery from a
default on a particular loan is calculated from the estimated implied recovery
rates of the market).

With respect to claim 5

Kealhofer teaches:

The computer implemented method of Claim 1 (see rejection of claim 1 above),
wherein said step of determining conditional default probability uses information
comprising histories of equity prices, debt outstanding, agency ratings, and
accounting variables (see col 3, lines 41-65).

With respect to claim 8

See rationale supporting the rejection of claim 1 above, note also the computer memory
taught at col 3, line 1.

With respect to claim 9

See rationale supporting the rejection of claim 2 above.

With respect to claim 10

See rationale supporting the rejection of claim 3 above.

With respect to claim 11

See rationale supporting the rejection of claim 4 above.

With respect to claim 12

See rationale supporting the rejection of claim 5 above.

With respect to claim 15

See rationale supporting the rejection of claim 1 above, note also the computer memory

taught at col 3, line 1.

With respect to claim 16

See rationale supporting the rejection of claim 2 above.

With respect to claim 17

See rationale supporting the rejection of claim 3 above.

With respect to claim 18

See rationale supporting the rejection of claim 4 above.

With respect to claim 19

See rational supporting the rejection of claim 5 above.

With respect to claim 22

Kealhofer teaches:

> The computer implemented method of Claim 1 (see rejection of claim 1 above),
>
> wherein said pricing trend function values credit-sensitive securities (see col 7,
>
> lines 54-59, note that value of the loan is determined using the default risk
>
> information).

With respect to claim 23

Kealhofer teaches:

> The computer implemented method of Claim 1 (see rejection of claim 1 above),
> further comprising: said at least one computer creating fair values of credit-
> sensitive and default contingent securities based on said conditional default
> probability, said pricing trend, and said default barrier distribution (see col 8, lines
> 21-29, note that the alternative method seeks to determine the market value of a
> loan by finding the joint probabilities of two loans. Note further that this
> calculation contemplates the respective borrowers underlying entity values,
> implicitly referring to the default, pricing and barrier distribution computed earlier
> in Kealhofer).

With respect to claim 24

Kealhofer teaches:

> The computer implemented method of Claim 1 (see rejection of claim 1 above),
> further comprising: outputting to an investor, said term structure of default
> probabilities (see col 4, lines 17-23, note that reports, graphs and output files are
> produced).

With respect to claim 25

Kealhofer teaches:

> The computer implemented method of Claim 1 (see rejection of claim 1
> above), further comprising: determining a compensator using said

conditional default process (note $G_m(DP_M|A_H)$ is a compensator for the

true underlying process of firm default, see col 7, lines 13-24).

With respect to claims 26 and 30

See rationale supporting the rejection of claim 22 above.

With respect to claims 27 and 31

See rationale supporting the rejection of claim 23 above.

With respect to claims 28 and 32

See rationale supporting the rejection of claim 24 above.

With respect to claim 29 and 33

See rationale supporting the rejection of claim 25 above.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4.   This application currently names joint inventors. In considering patentability of

the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of

the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g)

prior art under 35 U.S.C. 103(a).

5.   Claims 6-7, 13-14, and 20-21 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Kealhofer in view of Duffie and Lando, "Term Structures of Credit

Spreads with Incomplete Accounting Information," Exonometrica, 69(3):633-

664(2001)(Duffie).

With respect to claim 6

Kealhofer teaches:

>   The computer implemented method of Claim 1 (see rejection of claim 1 above),
>
>   further comprising the steps of:
>
>>   providing capability for triggering a default event when a firm value
>>
>>   falls below a default barrier value (note that a default barrier is calculated,
>>
>>   see col 6,lines 24-39, the logical components for triggering a default event
>>
>>   are rpesent, see col 4, lines 11-16, and an event reporting mechanism
>>
>>   exists, see col 4, lines 17-23. The capability is therefore fairly suggested
>>
>>   by this combination of teachings);
>>
>>   providing capability for incorporating an assumption that said
>>
>>   default barrier value is not publicly known (see col 6, lines 24-39, note that
>>
>>   the default barrier is estimated and adjusted and is not based upon a
>>
>>   publicly known default value);

using a history of fundamental data and other publicly available

information in determining said default barrier distribution and for

estimating parameters of said firm value process (see col 3, lines 42-65).

Kealhofer does not explicitly teach:

providing capability for representing a predefault firm value process

by a geometric Brownian motion;

Duffie teaches:

providing capability for representing a predefault firm value process

by a geometric Brownian motion (see pg 636, sec 2.1);

It would have been obvious to one having ordinary skill in the art at the time of

Applicant's invention to have provided Kealhofer with the representation of predefault

firm value process by a geometric Brownian motion taught by Duffie in order to have

analyzed term structures of credit risk and yield spreads in secondary markets as taught

explicitly by Duffie (see Abstract and pg 633, sec 1)

With respect to claim 7

Kealhofer in view of Duffie teaches:

The computer implemented method of Claim 6, further comprising the steps of:

using histories of daily equity prices and equity volatility forecasts,

reported liabilities, and risk-free interest rates as input to said step of

determining a conditional default probability (see Kealhofer, col 3, lines

42-65, note that by the time this information is captured by the method, the

data would be historical as the events had already transpired. Note further

that 'current', as recited by Kealhofer is read to encompass historical data

in so far as 'current' data include relevant data, including data from the

most current previous days, weeks, or months.);

Kealhofer as modified by Duffie does not explicitly teach:

using option pricing formulae to convert said equity prices and said

equity volatility forecasts into associated firm values and firm volatility;

estimating a mean and height of said a scaled beta distribution from

history of firm leverage ratios; and

providing capability for calibrating a degree of confidence about

information by providing variance of said distribution as a free parameter.

Duffie further teaches:

using option pricing formulae to convert said equity prices and said

equity volatility forecasts into associated firm values and firm volatility (see

pg 633, sec 1, and pp 636-640, sec 2.1);

estimating a mean and height of said a scaled beta distribution from

history of firm leverage ratios (see pg 643, sec 2.2.1 and fig 2); and

providing capability for calibrating a degree of confidence about

information by providing variance of said distribution as a free parameter

(various levels of accounting noise, see pg 644).

It would have been further obvious to one having ordinary skill in the art at the time of

Applicant's invention to have further provided Kealhofer with the use of option pricing

formulae, estimation of mean and height scaled beta distribution and capability for

calibrating the degree of confidence about information as taught by Duffie in order to

analyze the terms structures of credit risk and yield spreads in secondary markets as

taught explicitly by Duffie (see Abstract and p 633, sec 1)

<u>With respect to claims 13 and 20</u>

See rationale supporting the rejection of claim 6 above.

<u>With respect to claims 14 and 21</u>

See rationale supporting the rejection of claim 7 above.

Response to Arguments

6.   Applicant's arguments, see Remarks, filed 4/16/2008, with respect to the

rejections under 35 U.S.C. 101 and 35 U.S.C. 112 have been fully considered and are

persuasive in view of the accompanying amendments. These rejections have been

withdrawn.

7.   Applicant's argument that Kealhofer fails to teach a default barrier distributon,

however, are not persuasive. Examiner respectfully directs Applicant to Kealhofer col 4,

lines 24-42 and fig 2 and 3. Kealhofer teaches that the default barrier is probabilistic and

therefore not a static or discrete number as Applicant argues. This point is further

underscored by fig 3. Note that the default barrier pictured at t_H is represented as a 'bell

curve', suggesting a normal distribution.

Conclusion

8.   **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time

policy as set forth in 37 CFR 1.136(a).

9.   A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the mailing date of this final action.

10.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to BRIAN FERTIG whose telephone number is (571)270-

5131. The examiner can normally be reached on Monday - Friday 8:30am to 5:00pm

EST.

        If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, James Trammell can be reached on (571) 272-6712. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

11.   Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B.F./

/Mary Cheung/
Primary Examiner, Art Unit 3694